



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/713,101	11/17/2003	Alan R. Maguire	84711 3049 Gnn	9769
20736	7590	03/09/2006		
MANELLI DENISON & SELTER 2000 M STREET NW SUITE 700 WASHINGTON, DC 20036-3307			EXAMINER VERDIER, CHRISTOPHER M	
			ART UNIT 3745	PAPER NUMBER
DATE MAILED: 03/09/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

6

Office Action Summary	Application No. 10/713,101	Applicant(s) MAGUIRE ET AL.	
	Examiner Christopher Verdier	Art Unit 3745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11-17-03 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11-17-03</u> . | 6) <input type="checkbox"/> Other: ____. |

Priority

Acknowledgment is made of applicant's claim for foreign priority based on an application filed in the United Kingdom on November 27, 2002. It is noted, however, that applicant has not filed a certified copy of the United Kingdom application as required by 35 U.S.C. 119(b).

Drawings

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: "36" and "66". Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The disclosure is objected to because of the following informalities: Appropriate correction is required.

On page 1, line 10, "ie" should be changed to -- i.e. --.

On page 1, line 24, "surface" should be changed to -- surfaces --.

On page 1, lines 32-33, "leaked air from ... therewith" is non-idiomatic and ambiguous.

Claim Objections

Claims 1-9 are objected to because of the following informalities: Appropriate correction is required.

In claim 1, line 5, "segment" should be changed to -- segments --.

In claim 1, lines 6-7, "leaked air ... therewith" is non-idiomatic. It appears that -- which are -- should be inserted before "leaked".

In claim 2, line 4, "a" should be changed to -- the --.

In claim 4, line 4, "a" should be changed to -- the --.

In claim 5, line 3, "a" should be changed to -- the --.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 1, line 7, claim 2, line 5, claim 4, line 5, and claim 5, line 4, "therewith" is indefinite because it is unclear as to which of the multiple claim limitations (for example, the central space volume or the gas turbine engine) this is meant to refer to. In claim 5, line 3, "radially compartment" is unclear if this is meant to refer to the one compartment or the radially inward compartment recited in claim 4.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-5 and 9, as far as they are definite and understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over United Kingdom Patent 806,815 in view of Fuller 4,804,310 and United Kingdom Patent 2,016,606. The United Kingdom Patent 806,815 discloses a cooled turbine structure substantially as claimed comprising hollow shroud segments 17, and pipe members (unnumbered, formed by the interior wall portions of guide vanes 16) adjacent stages of guide vanes 16 and turbine blades 13, wherein the turbine blades are surrounded in spaced relationship by the hollow shroud segments, which are leaked air from a central space volume

Art Unit: 3745

(radially inward of 16) in a gas turbine engine when operatively associated with the central volume, the passage of the leaked air from the central space volume to the hollow shroud segment interiors being enabled by the pipe members which extend through the guide vanes which connect the space volume and the hollow shroud segment interiors in flow series. Each hollow shroud segment interior includes a dividing wall 32 so as to provide radially inner and outer compartments with respect to the axis of rotation of the gas turbine engine. Leaked exit apertures 35 connect a radially inner compartment 34 with the gas annulus of the gas turbine engine.

However, the United Kingdom Patent '815 does not disclose that the shroud segments are connected via respective upstream ends to the guide vanes (claim 1), does not disclose that the shroud segments include a leaked air exit aperture in their respective downstream edges (claim 1), does not disclose that the dividing wall has multiple perforations therein so as to enable leaked air to flow from one compartment to the other compartment (claim 3), and does not disclose that the direction of flow from one compartment to the other compartment is radially inward with respect to the axis of rotation of the gas turbine engine (claim 4).

Fuller (figure 2) shows a gas turbine engine having shroud segments 14 that are connected via respective upstream ends near 29 to guide vanes 20, via lugs 29 and lugs 32 which bear against downstream guide vanes 22, for the purpose of providing support for the shroud segments via the guide vanes.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to form the gas turbine engine of the United Kingdom Patent '815 such that the shroud segments are connected via respective upstream ends to the guide vanes, as taught by Fuller, for the purpose of providing support for the shroud segments via the guide vanes.

The modified turbine structure of United Kingdom Patent '815 shows all of the claimed subject matter except for the shroud segments including a leaked air exit aperture in their respective downstream edges (claim 1), with the dividing wall having multiple perforations therein so as to enable leaked air to flow from one compartment to the other compartment (claim 3), with the direction of flow from one compartment to the other compartment being radially inward with respect to the axis of rotation of the gas turbine engine (claim 4).

United Kingdom Patent 2,016,606 (figure 1) shows a gas turbine engine having shroud segments 5 including a leaked air exit aperture 14 in their respective downstream edges, with a dividing wall 13 having multiple perforations 15 therein so as to enable air to flow from one outer compartment to one inner compartment 16, with the direction of flow from one compartment to the other compartment being radially inward with respect to the axis of rotation of the gas turbine engine, for the purpose of enabling cooling of the shroud segments and exhaust of the spent cooling air from the shroud segments via the leaked air exit apertures.

Art Unit: 3745

It would have been further obvious at the time the invention was made to a person having ordinary skill in the art to form the modified turbine structure of the United Kingdom Patent '815 such that the shroud segments include a leaked air exit aperture in their respective downstream edges, with a dividing wall that has multiple perforations therein so as to enable leaked air to flow from one compartment to the other compartment and such that the direction of flow from one compartment to the other compartment is radially inward with respect to the axis of rotation of the gas turbine engine, as taught by United Kingdom Patent 2,016,606, for the purpose of enabling cooling of the shroud segments and exhaust of the spent cooling air from the shroud segments via the leaked air exit apertures.

Claim 6, as far as it is definite and understood, is rejected under 35 U.S.C. 103(a) as being unpatentable over United Kingdom Patent 806,815 and Fuller 4,804,310 and United Kingdom Patent 2,016,606 as applied to claim 2 above, and further in view of Scricca 5,649,806. The modified turbine structure of United Kingdom Patent 806,815 shows all of the claimed subject matter except for each of the dividing walls being spaced from its associated inner wall by pillars.

Scricca shows a cooled turbine shroud having walls 33 spaced from one another by pillars (pedestals) 62, for the purpose of preventing collapse of the shroud during blade rub contact.

Art Unit: 3745

It would have been further obvious at the time the invention was made to a person having ordinary skill in the art to form the modified turbine structure of the United Kingdom Patent '815 such that each of the dividing walls is spaced from its associated inner wall by pillars, as taught by Scricca, for the purpose of preventing collapse of the shroud during blade rub contact.

Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hsia, Japanese Patent 62-153,504, and United Kingdom Patent 1,484,288 are cited to show various cooled shrouds with inner and outer compartments.

United Kingdom Patents 938,247 and 1,119,774 are cited to show stator vanes with cooling pipes.

Flatman is cited to show a cooled turbine vane arrangement structurally similar to that of Applicants.

Allowable Subject Matter

Claims 7-8 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

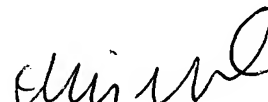
Art Unit: 3745

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher Verdier whose telephone number is (571) 272-4824. The examiner can normally be reached on Monday-Friday from 10:00-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward K. Look can be reached on (571) 272-4820. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

C.V.
February 27, 2006



Christopher Verdier
Primary Examiner
Art Unit 3745